FOREST MANAGEMENT UPDATE

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— The Small Watershed Program
— Another Planting Scheme
— The Sustainable Timber Investment Tax Incentive
— Confused About Cost-Share Programs?
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. . . for Forestland Managers and Others Interested in Stewardship of the Forest Resource.

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Cover Picture: *Lights, Camera, Action! Bob Stobaugh, USDA, videotapes Rodger Ozburn, WV Division of Forestry, and Nancy Lough and John Baumgras, USFS, as they portray private non-industrial landowners receiving professional management advice.*

Note: All articles contained in Forest Management Update are written by Arlyn W. Perkey (•AWP•) unless otherwise noted.

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Yellow-Poplar — How Fast Can It Grow?

Historically, yellow-poplar has been an important species in the central and southern Appalachian forest. Recent market developments and inventory information indicate that its importance as a raw material will probably increase in the future. The variety of new uses and markets causes concerned citizens to ask if there will be adequate resource to meet the increasing demand for high-quality, high-value timber.

Whenever new markets for small-size/low-value material develop, there is legitimate concern about how these markets will influence harvesting practices. Will the opportunity to remove smaller-size trees result in lowering the diameter-limit for widespread diameter-limit cutting? Or, might the forestry community be able to influence harvesting so small, low-quality trees are used to make products that do not require large, high-quality trees? The removal of those trees actually contributes to the management of high-quality trees by providing additional growing space. The latter scenario could be referred to as having your cake and eating it too.

Concern is especially great on the non-industrial private forest where all too frequently harvesting is done without the supervision of a professional forester. The challenge before the forestry community in West Virginia is to see if we really can have our cake and eat it too. We are fortunate to have the silvicultural knowledge that enables us to manage yellow-poplar to grow high-value product while harvesting low-quality material. The question is: "Do we have the ability and will to act as a forest community in a way that will cause this economically desirable outcome to become a reality? It is my hope and belief that we do and we will.

This released yellow-poplar crop tree has a crown that is both wide and deep, which gives it good potential for rapid growth.

How fast can yellow-poplar grow? It depends on site, stand history, age, and the free-to-grow rating of the trees. This article focuses on the growth of individual yellow-poplar crop trees, providing advice on how to manage them to accelerate the growth of the trees with the greatest potential to produce high-value timber products.

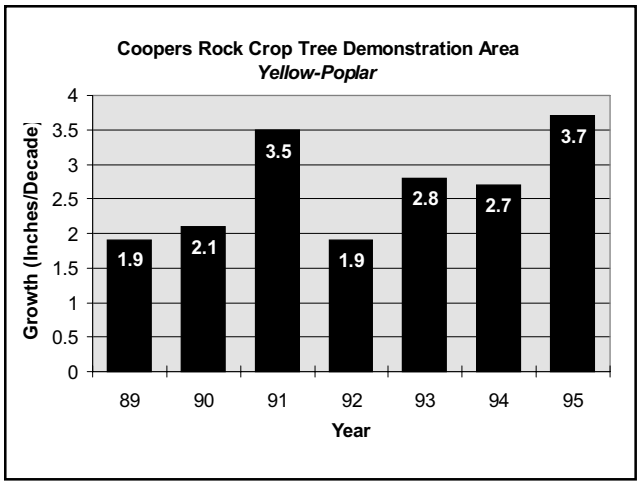
Some of the most thorough research on individual tree growth was done on yellow-poplar at West Virginia University by Torkel Holsoe in the late 1940's and early 1950's. His work was enhanced by growth and tree quality studies conducted by Dick Trimble, Clay Smith, Neil Lamson, and now Gary Miller at the Fernow Experimental Forest. Some additional information has been collected in recent years from crop tree demonstration areas at Coopers Rock and Camp Creek State Forests in West Virginia, and Raystown Lake and my own Perkey Tree Farm in Pennsylvania. While we certainly don't have all the answers regarding growth of yellow-poplar, we do know enough to make some firm recommendations.

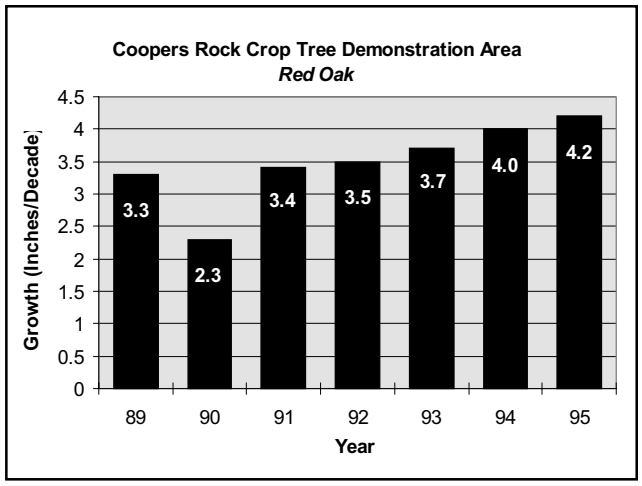
COOPERS ROCK CROP TREE DEMONSTRATION AREA —

The crop tree demonstration area at Coopers Rock State Forest has seven monitored growing seasons. Yellow-poplar is growing in association with red oak in sufficient numbers to make some comparison between the growth rates of the two species.

Rodger Ozburn, West Virginia Division of Forestry, discusses growth of crop trees with landowners at Coopers Rock Crop Tree Demonstration Area.

The following charts illustrate the difference in growth between the yellow-poplar and the red oak.





Here are some observations:

- Yellow-poplar crop tree growth varies more from year-to-year than red oak, possibly reflecting a greater sensitivity to annual precipitation.

- Red oak out-performed yellow-poplar every year but one.

The following table shows that the yellow-poplar trees that received a crop tree management release grew almost an inch more in diameter over the seven growing seasons than the yellow-poplar control trees.

Coopers Rock Crop Tree Demonstration Area Yellow-Poplar Growth			
Location	1988 dbh	1995 dbh	Growth Rate (Inches/Decade)
CT Release Treatment	15.4	**17.3**	2.7
Area-Wide Thinning	15.6	16.9	2.0
Control	15.3	**16.3**	1.5

Visitors to the Coopers Rock Crop Tree Demonstration Area have frequently expressed concern about the area-wide growth parameters in the most intensively cut crop tree management treatment areas. Permanently located 10 BAF variable radius plots were established and measured prior to treatment, immediately after treatment, and six years following treatment. Remeasuring these plots has provided information about growth of basal area, relative stand density, and board foot volume following treatment. Although the measurement of these parameters is not essential to the application of crop tree managment, they do provide a valid measure of how these widely accepted parameters change following a treatment.

Coopers Rock Crop Tree Demonstration Area Basal Area			
CTM Objective(s)	Pre-Treatment Fall, 1988	Post Treatment Spring, 1989	1994
Timber, Wildlife, Aesthetic	148	83	115
Timber, Wildlife	132	60	98
Timber	130	**43**	**70**

The growth in basal area and relative density is striking. For example, on the intensively cut plot where timber was the only objective, the basal area changed from 43 to 70 square feet (all trees 1-inch dbh and larger). Of the 27 sq. ft. of growth, 7 feet was on regeneration established after the treatment. Twenty square feet was on residual trees. It is critical to recognize that this growth can only be expected when the crop trees have healthy, vigorous crowns that are capable of accelerating growth in response to the increase of site resources made available to them. A diameter-limit cut to a similar basal area that removes most of the stand's best performers cannot be expected to give the same results.

CAMP CREEK CROP TREE DEMONSTRATION AREA —

The Camp Creek Crop Tree Demonstration Area is located on a site that is not productive for yellow-poplar. However, the comparison of growth rates between crop trees and control trees reveals a very dramatic response to release. Control trees grew 1.3 inches/decade, and released crop trees grew 3.0 inches/decade.

Camp Creek Crop Tree Demonstration Area Growth (Inches/Decade)		
Species	Control	Crop Trees
Yellow-Poplar	**1.3**	**3.0**
Chestnut Oak	1.8	2.5
Black Oak	1.7	2.2
White Oak	1.5	2.2

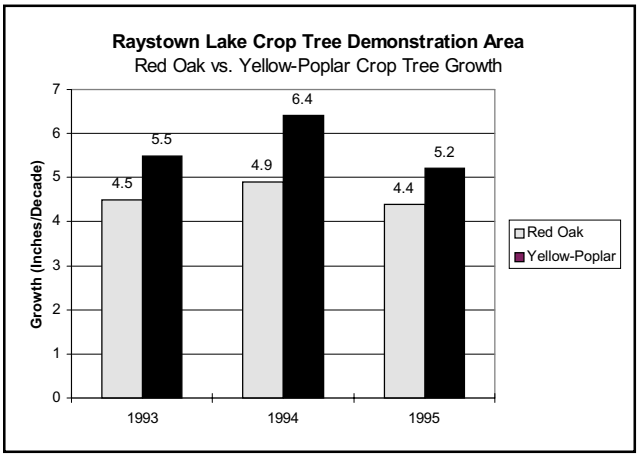
Comparing control and crop tree growth rates among species (yellow-poplar, chestnut oak, black oak, and white oak) reveals how responsive to release yellow-poplar is on this site. Yellow-poplar is the slowest growing tree in the controls, but it is the fastest growing released crop tree.

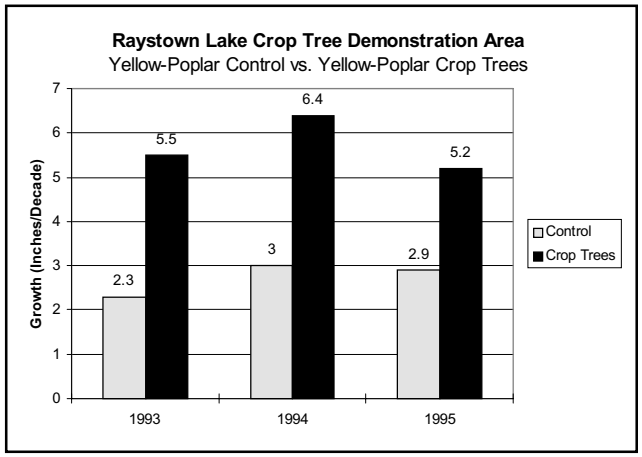
The following area-wide statistics for the crop tree management plots at Camp Creek reflect the difference the growth potential of the residual trees can have on the basal area growth of the plot. The post-treatment basal area of all three crop tree management plots was about equal. In the plot where timber was the only objective, more of the residual trees had characteristics that would enable them to respond to the increase in growing space. Where wildlife and aesthetics were also important objectives, crop trees included large, old, hollow black gum trees that met the plot objectives, but were unable to grow rapidly following release. This difference in the growth of individual crop trees is reflected in the reduced basal area growth rate for the plot

Camp Creek Crop Tree Demonstration Area Basal Area			
CTM Objective(s)	Pre-Treatment Fall, 1989	Post Treatment Spring, 1990	1995
Timber, Wildlife, Aesthetic	137	**62**	78
Timber, Wildlife	150	**63**	77
Timber	153	**63**	92

RAYSTOWN LAKE CROP TREE DEMONSTRATION AREA —

The growth rate of both control and crop trees at Raystown Lake indicates that the site productivity is significantly greater than at either Coopers Rock or Camp Creek. The yellow-poplar control trees at Raystown Lake are growing approximately at the same rate as the released crop trees at Coopers Rock. While there are other variables, such as the age and size of the crop trees, the primary reason for the growth difference is probably site related. The released yellow-poplar crop trees at Raystown Lake are growing approximately twice as fast as the released yellow-poplar crop trees at both Coopers Rock and Camp Creek.





In contrast to Coopers Rock, the yellow-poplar at Raystown Lake is growing faster than the red oak. This growth rate relationship may change later in the life of the stand.

FISH TROUGH DEFERMENT AT THE FERNOW EXPERIMENTAL FOREST

At the Fernow Experimental Forest near Parsons, West Virginia, a deferment cutting was installed in 1980. Approximately thirteen healthy, high-quality trees per acre were left standing in what would otherwise have been a silvicultural clearcut to 2-inches dbh. The primary purpose of keeping these large trees was to explore the mitigating effect the residual trees had on the aesthetic appearance of the treatment.

The growth of these fully released trees has been monitored over a fifteen-year period, providing good data for seventy-five-year-old yellow-poplar on a good site. Prior to release, the stand had not been managed, so the crowns weren't quite the width and depth recommended by Torkel Holsoe. However, these trees can be used to provide a basis for a conservative estimate of physical growth rates of relatively large (16- to 24-inch dbh) yellow-poplars. These rates can be combined with relevant stumpage values to estimate real rate-of-return (ROR) and income per tree. This information provides a gauge that can be used to help managers decide how large they want to grow released crop trees before they are regarded as being financially mature.

With the stumpage price assumptions used for this calculation, both the real rate-of-return and income per tree are declining after the trees reach 22 inches dbh. Changing stumpage prices and value thresholds associated with increases in diameter can have dramatic effects on both rate-of-return and tree income per year. When establishing financial maturity, both of these parameters are important to consider because:

1. ***Rate-of-return by itself is an inadequate financial parameter for evaluating individual tree performance***. Rate-of-return provides a measure of how rapidly the value of the initial investment is increasing, but it does not indicate the significance of the increase. For example, a tree may be worth $0.50 at the beginning of a ten-year period and $1.00 at the end of the decade. Its rate-of-return is 7.2%. That is a good rate-of-return, but it doesn't have much consequence. The tree didn't earn enough in 10 years to even cover the cost of a cup of coffee. In contrast, a tree initially worth $50 at the beginning of the same period and $100 at the end of the decade would have the same rate-of-return. However, the consequence would be very different. You could buy a good coffee pot and a supply of coffee to go with it.

2. ***Income per tree per year by itself is an inadequate financial parameter for evaluating individual tree performance***. Income per tree per year provides a measure of how much financial value the crop trees are producing, but it does not relate that to how much initial value is present at the beginning of the period. In the above example, a 24-inch tree is earning $3.23 per year, and a 16-inch tree is earning only $1.83 per year. Looking only at this parameter, you would think the 24-inch trees would be the better investment. However, the investment in these trees represents a much greater obligation of capital at the beginning of the 10-year period than the investment in the 16-inch trees.

Fernow Experimental Forest Fish Trough Deferment			
DBH Class	Growth (In./Dec.)	ROR (%)	Income ($/Tree/Year)
16	3.1	6.9	$1.83
18	3.5	8.7	$3.15
20	3.3	6.7	$3.64
22	3.3	5.4	$3.76
24	3.5	3.7	$3.23

The combination of these two financial parameters provides an indication of how the investment is performing relative to the amount of capital obligated at the beginning of the period (rate-of-return). It also gives an indication of the consequence of that investment (income per tree per year).

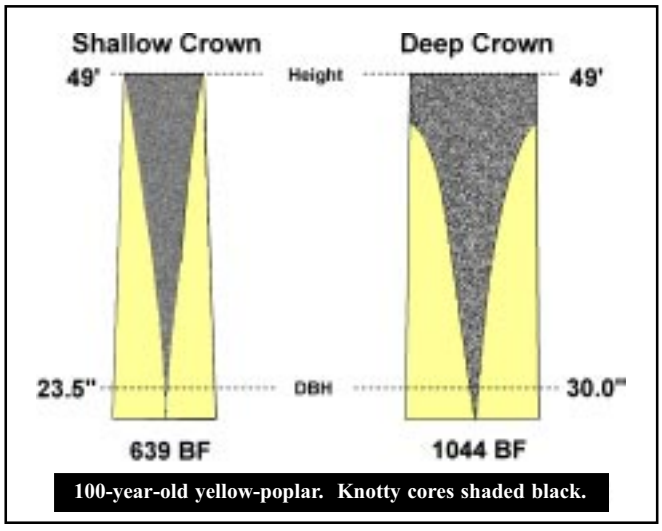
It is easy to translate income per tree per year to income per acre per year. Again, using the example from the Fish Trough Deferment Cut at the Fernow, if there are ten 16-inch trees per acre, they yield an annual produced income of $18.30/acre. If there are ten 24-inch trees per acre, they yield an annual produced income of $32.30 — almost twice as much. As the number of high-quality, rapidly growing trees per acre increases, so does the resulting income per acre.

SELECTING YELLOW-POPLAR CROP TREES WITH THE BEST FINANCIAL POTENTIAL

Size of Crown — To produce a good rate-of-return and income, a tree must have a healthy crown that is not only wide, but deep, as well. In many previously unmanaged stands, the most vigorous dominant and codominant trees have live crown ratios of about 20 percent. To achieve good growth rates, it is desirable to have live crown ratios of 40-50 percent. This higher ratio is easier to develop in young stands that have not yet achieved a significant percentage of their full height growth. In middle-aged yellow-poplar stands (50-60 years old), opportunities for increasing crown size still exist, but are limited by the slower height growth. Working in young stands that are between 25- and 60-feet tall may be difficult because the work must often be done precommercially. However, trees in these stands have the potential to develop the deep crowns needed to sustain excellent growth rates, dependent on the site, throughout their lifespan.

In the early 1950's Torkel Holsoe recommended releasing individual trees to maintain live-crown ratios close to 50 percent. He diagrammed crowns and boles of trees to graphically show how much additional clear wood is produced when crowns are released and deep crowns are maintained. The released trees have rapid growth rates that result in larger boles with more clear wood on the lower two logs than can be obtained from smaller diameter trees with lower crown ratios. If this recommendation would have been applied on a widespread basis, we would have a very impressive high-quality yellow-poplar resource to harvest today.

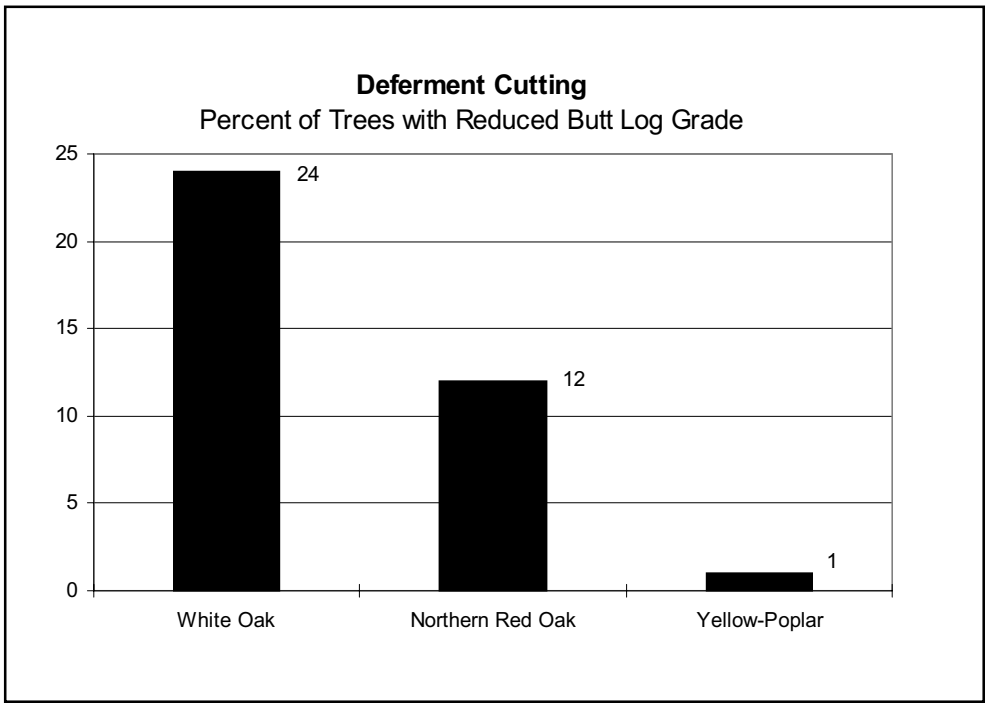
Clear Wood Volume Comparisons



100-year-old yellow-poplar. Knotty cores shaded black.

Although it is unlikely we could financially afford to grow crop trees to the diameters indicated in the preceding graphic, the principal is valid for trees grown to diameters we accept as being financially mature today (20 to 26 inches dbh). Using 1950's vintage stumpage prices, Torkel showed that released 2-log trees with deep crowns could reach approximately the same value in 70 years that 3-log trees could reach in 100 years. Diameters (dbh) at these two respective ages were approximately the same — 23.5 inches.

Epicormic Branches — With yellow-poplar, what you see is what you get. That is, if the potential crop tree has existing epicormic branches or visible dormant buds, they will persist and grow following a crown-touching release. However, the species has little tendency to produce additional epicormic branches. Consequently, there is seldom a decrease in log grade because of the release. The following graphic compares this tendency with red and white oak.



Crown Configuration — Yellow-poplar crowns are very subject to breakage in wind, ice, and wet snow storms. To reduce the probability of crown damage, it is advisable to avoid selecting crop trees that have major V-shaped forks, especially if there is a visible seam below the fork. Branches that are smaller and join nearly perpendicular to the main stem are preferable. Discriminate against selecting crop trees that have major crooks on the main stem; crooks are a vulnerable point of breakage. As with any species of timber crop tree, it is desirable to have a crown that has live branches on all four sides of the main stem so the weight of the crown is balanced around the bole.

Windfirmness — Windthrow has not been a problem with yellow-poplar in the previously mentioned crop tree management demonstration areas or the research treatment areas established on the Fernow Experimental Forest. However, on sites with shallow soils on exposed ridges, caution may be appropriate. When tip-overs are observed in the woods, frequently people assume it is because of windthrow. Although wind may be a factor in the event, often ice, wet snow, and saturated soil are also major contributors. In my opinion, there is much greater risk for damage to yellow-poplar from crown breakage than from windthrow.

WHAT DOES IT ALL MEAN?

Yellow-poplar has the potential to be a premier tree in the central Appalachians. With adequate release, it can grow at the rate of 3 to 5 inches per decade on acceptable sites. With those growth rates, harvestable-size sawtimber trees are possible in 50 to 60 years. Although we still may not match southern pine volume per acre growth rates, good yellow-poplar sites can produce pretty impressive volumes of potentially high-value product.

This released yellow-poplar crop tree is growing well at the Perkey Tree Farm and Stewardship Forest in southwestern PA.

If we apply a crown-touching release to the most desirable timber crop trees at a relatively young age, good naturally regenerated stands may have 35 crop trees per acre that can be retained to a mature diameter at breast height of about 20-22 inches. The butt logs of these trees will contain about 200 board feet, with an additional 100 board feet in the second log. That equates to about 7,000 board feet of high-value product and 3,500 board feet of lower value product. If that volume is grown in 50 to 60 years, we have a rotation length that may approach competitiveness with other wood-producing regions of the country.

In the past we have not made widespread, large-scale investments in yellow-poplar stands. Considering its potential growth rate on good sites, and the ease with which it is regenerated naturally (in the absence of an excessively high deer population), perhaps the time has come to change our investment strategy in this country. We need to direct financial and human resources to the development of this excellent investment opportunity in the central Appalachian hardwood region. The Stewardship Program (a public initiative) and the Sustainable Forestry Initiative (a private endeavor) have names that indicate a commitment to the management and wise use of our forest resource. The new markets for yellow-poplar give the forestry community an excellent opportunity to act on this commitment to the stewardship of a sustainable forest resource. Let's do it.

•AWP•

The Small Watershed Program: Coming to a Stream Near You

by Roxane S. Palone
Watershed Specialist, USDA-FS, Morgantown, WV

Kennett Square, Chester County, Pennsylvania, is considered by many to be the "mushroom capital of the World." Approximately 100 mushroom operations in this area produce more than 85 percent of the mushrooms grown in the United States. This portion of southeastern Pennsylvania is located in the Red and White Clay Creek Watershed — the source of the municipal water supply for the city of Wilmington, DE. When the Chester County Conservation District became concerned about mushroom producers, other farmers, and developers contributing to the nonpoint source pollution entering Red and White Clay Creeks, they turned to the Natural Resources Conservation Service (NRCS) in Harrisburg for assistance. Help is available in the form of the Watershed Protection and Flood Prevention Act (Public Law 83-566), commonly known as the "Small Watershed Program (PL-566)." The PA Bureau of Soil and Water Conservation approved the District's application for assistance, and the Chester County Conservation District subsequently became a project sponsor. A plan was written in cooperation with other partners and submitted to the USDA for implementation funds.

Mushroom farming is done indoors and requires special compost and lots of water.

How the Program Works

Back in the 1940's, the federal government was mainly concerned about flood control. It was the responsibility of the U.S. Army Corps of Engineers to build large dams for that purpose. In the 1950's, Elmer Peterson created quite a stir with his book titled "Big Dam Foolishness." The book caused the government to begin to look at upland treatments as part of watershed protection. Small watershed pilot projects were developed and implemented. In 1954, the pilot projects were expanded nationwide by the passage of Public Law 83-566. Initially, it had only two components — 1.) Erosion and sediment control, and 2.) Flood prevention. Today, the program is very flexible.

The Small Watershed Program, authorized and administered by the Department of Agriculture, helps communities plan and implement projects to improve the quality of life for those living in the watershed. For the purposes of this program, a small watershed must be less than 250,000 acres in size. The NRCS and the Forest Service provide technical, financial, and credit assistance to the residents of the watershed. Federal, state, and local agencies assist the sponsors in writing a watershed plan that will be used to accelerate the implementation of ongoing programs.

The law has the following three general purposes:

- ☑ Preventing damage from erosion, floodwater, and sediment;
- ☑ Furthering the conservation, development, utilization, and disposal of water; and
- ☑ Furthering the conservation and proper utilization of land.

Cost-sharing can be used to accomplish several purposes under the program. These include:

Watershed protection — Land treatment of watershed areas for the primary purpose of reducing offsite soil- and water-related problems such as erosion, sedimentation, and agricultural nonpoint source pollution. This purpose makes the small watershed program unique from other federal programs. Some of the practices to be implemented on Red and White Clay Creeks are critical area plantings, livestock exclusion, cropland nutrient management, conversion of cropland to trees, tree planting, and riparian forest buffer establishment. It may also include acquisition of flood plain and wetlands easements.

Flood prevention — These may be structural and/or nonstructural measures. Structural measures include building levees, dams, dikes, or floodways. Nonstructural measures include zoning, floodproofing structures, land acquisition, relocation, and flood warning and response systems.

Housing developments can add to the nonpoint source pollution of streams in the area.

Agricultural water management — These practices are used to conserve water and increase water use efficiency. They include such practices as drainage systems, construction of diversion dams and water supply reservoirs, and irrigation sprinkler systems.

Non-agricultural water management — This includes practices that enhance public fish and wildlife development and public recreation. Measures for wildlife may include restoration of wetlands, fish ladders, fish shelters and marsh development, and nesting areas for waterfowl. Recreation facilities can be developed to provide opportunities for boating and fishing. Construction of boat ramps, fishing piers, swimming beaches, picnic areas, and sanitary facilities is also possible.

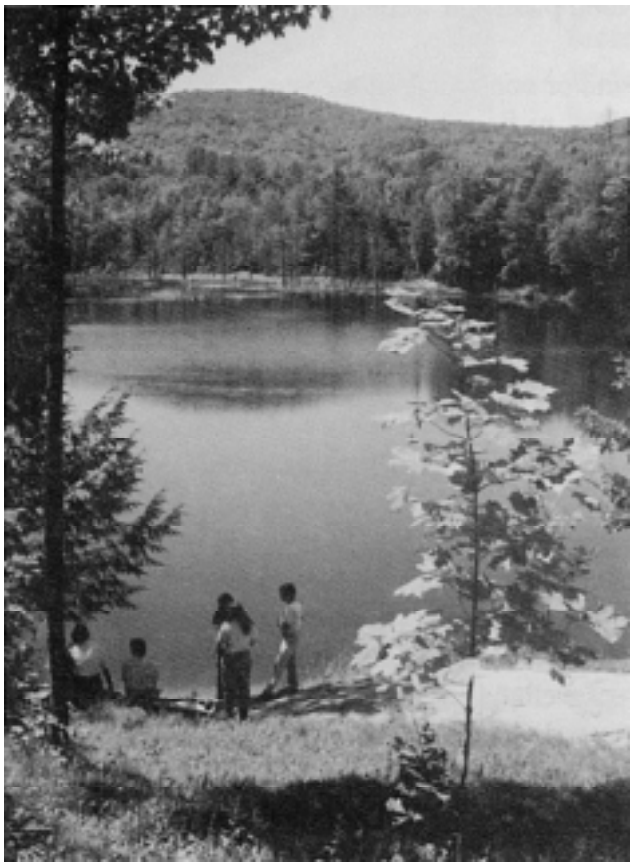
Groundwater recharge — These measures, used in areas where there is a shortage of groundwater, include water storage impoundments, diversions, injection wells, and other water-spreading techniques.

Municipal and industrial water supply — Developments for supplying water for municipal or industrial use can be included in the plan when feasible. Pipeline construction for way conveyance from a stream or reservoir to a water treatment plant may also be included.

Plan implementation costs are paid for by the federal government and by the local sponsors. Cost-share rates depend on the type of measures that are incorporated into the plan. Measures can be classified as land treatment, nonstructural, or structural. Cost-share for land treatment is currently 65 percent, and cost-share for conservation easements is 50 percent. Construction and engineering costs for flood prevention are 100 percent cost-shared.

Role of Forestry Agencies

During the planning stage, the Forest Service assists in the preparation of an Environmental Assessment (EA). The Forest Service roles and responsibilities are defined in Memorandums-of-Understanding (MOUs). The Forest Service is responsible for forestlands and rangelands associated with the National Forest System and state and private lands. The Forest Service serves on a technical team that regularly meets with the sponsors to document problems in the watershed, formulate a plan, and develop alternatives for implementing the plan. The Forest Service works closely with the local State Forester's staff to write a report that addresses forest resources concerns, forest resources opportunities, and sources of additional funds that can augment the PL-566 program.



In order to qualify for assistance through Public Law 83-566, watershed size must be less than 250,000 acres.

The state forestry agency is involved in deciding what forestry practices can be implemented in the watershed, how much landowner participation to expect, how much funding will be needed, and if additional personnel will be needed for techncial assistance. Once the plan is approved by the state agency, it is sent to Washington for approval by the NRCS. The Forest Service obtains funds for the plan's forestry practices and passes them to the State Forester.

In Red and White Clay Creek Watershed, several hundred acres of cropland will be converted to trees, and riparian forest buffers will be established. The Forest Service and the PA Bureau of Forestry worked together to decide how much technical assistance, expressed in dollars and time, would be needed.

The State Forester and his staff are important partners in the Watershed program. The State Forester is part of the Governor's cabinet, and the Governor's office or designated representative must approve applications for projects. Forestry knowledge is critical to the planning and implementation of projects.

Most of the small watersheds contain large acreages of forestlands. In other watersheds, reforestation is a key conservation practice needed to implement water quality improvements. Most watersheds are located in rural areas that contain state and/or national forests. Watersheds in the East are comprised mainly of non-industrial private forestlands. Some structures built using PL-566 funds are located on state forestlands. It is the responsibility of the State Forester to maintain, operate, and replace these structures. In some cases, the State Forester may want to sponsor a project.

Conservation Districts play a big role in implementing small watershed plans. They work with local communities to conduct public meetings and with local landowners to install practices. They produce valuable educational materials and newsletters for residents of the watershed. Some Conservation Districts employ their own foresters.

Each state has a different mechanism for approving PL-566 projects for planning. In our states, the following entities approve applications for assistance under the law:

DE — Governor
MD — State Soil Conservation Committee
NJ — State Bureau of Water Resources Planning
OH — Department of Natural Resources
PA — Department of Environmental Protection, Bureau of Soil & Water Conservation
WV — State Soil Conservation Agency

Many small watersheds contain large acreages of forestland.

The National Watershed Coalition

The National Watershed Coalition, headquartered in Lakewood, Colorado, advocates using the watershed approach to identify natural resource problems. It supports the use of the Watershed Protection and Flood Prevention Act as one of the best vehicles for planning and implementing water resource management and development projects. Started in 1989, it is a non-profit group made up of governmental, environmental, and industrial entities. It replaced the old Watershed Congress that started in the 1950's. The Watershed Congress held an annual meeting that promoted and discussed the Small Watershed Program. Highlights of the meeting included awards for Watershed of the year and Watershed Conservationist of the year. In 1989, members of the Congress and other groups, including environmental and conservation groups, met and founded the National Watershed Coalition. The first meeting was held in Oklahoma City. Now, the coalition has a national meeting every other year. In 1997, the meeting will be held in Reno, NV. In the years that there is no national meeting, the coalition sponsors a technical workshop relating to watershed planning and project implementation.

These are tough times economically for most government agencies, and very few federal activities are scrutinized as closely as this program is. For every dollar spent by the federal government to solve water resources problems, society gets $2.20 in benefits. As the government reduces its federal funding, the National Watershed Coalition is becoming more involved. The Coalition works to support other programs, such as EPA section 319 and state watershed programs. It is the task of the coalition to decide how to continue effective programs in light of less federal funds. In the area of technical assistance, the federal government no longer is the sole provider of specialists. More and more work is being shifted to local conservation districts and private consultants.

Funding for the program has shifted since its inception. The federal share of funds for flood control structural projects went from 65 to 75 percent, with the local residents putting in 25 or 35 percent.

White Clay Creek is an "Approved Trout Waters," which means it meets requirements of the Pennsylvania Fish and Boat Commission for trout fishing. The public benefits from the improved water quality that the Small Watershed Program offers.

Today, the focus is on nonstructural projects, and the investment ratio has shifted to 60/40 and, in some cases, 50/50. Actual funding needs around the country are close to $250 million annually for implementation. Until the mid-1980's, the federal government allotted $10-15 million for planning and $170-200 million for implementation. That level of funding could not address all the concerns, but it was enough to run an effective program. Recently, implementation funds have declined to $75-100 million annually. It has been difficult to do an adequate job at this level of funding. Local sponsors are waiting longer and longer for federal funds to be awarded.

For the future, there is some concern that the federal government may distance itself financially and technically from the program. Sponsors feel this would be unwise. Though projects have local and regional benefits, water quality benefits are cumulative and national in scope. Other countries have begun using our program and concepts as a model for solving their water resources problems. They like the program because it is flexible and relevant to their particular situations. The Watershed Protection and Flood Prevention Act is the perfect marriage of government and local people working together. It is the task of the Coalition and its partners to keep this marriage strong.

For more information, contact the District Conservationist at the Natural Resources Conservation Service office in your county, or John Peterson, National Watershed Coaltion, 703-455-4387.

Another Planting Scheme

In Issue 16 of the Forest Management Update, an article titled *Reforesting Abandoned Agricultural Land*, described some planting mixtures for hardwoods and conifers. This *interplanting,* as I called it, is also being referred to as *companion planting*. The scenario I described was an approximately 10'x10' spacing that resulted in about 400 total trees per acre. There were three intensities of hardwoods planted — 25, 50, and 100 trees per acre — with the remaining component being conifer.

There has been considerable interest in the scheme of 100 hardwoods per acre. Following are some additional ideas that may have application in specific circumstances:

The need to accommodate machine mowing.

Maintenance of plantations is critical. If your landowner plans to do machine mowing as a part of that maintenance, it is advisable to take that into consideration when designing the plantation. If the 10'x10' spacing in the above referenced article is too narrow for the equipment available to the landowner, an alternative of 12'x8' or 12'x10' spacing may be good compromises that give the additional width in one direction. A 12'x8' spacing is 454 trees per acre. A 12'x10' spacing is 363 trees per acre.

The desire to plant a mixture of at least 50 percent hardwoods.

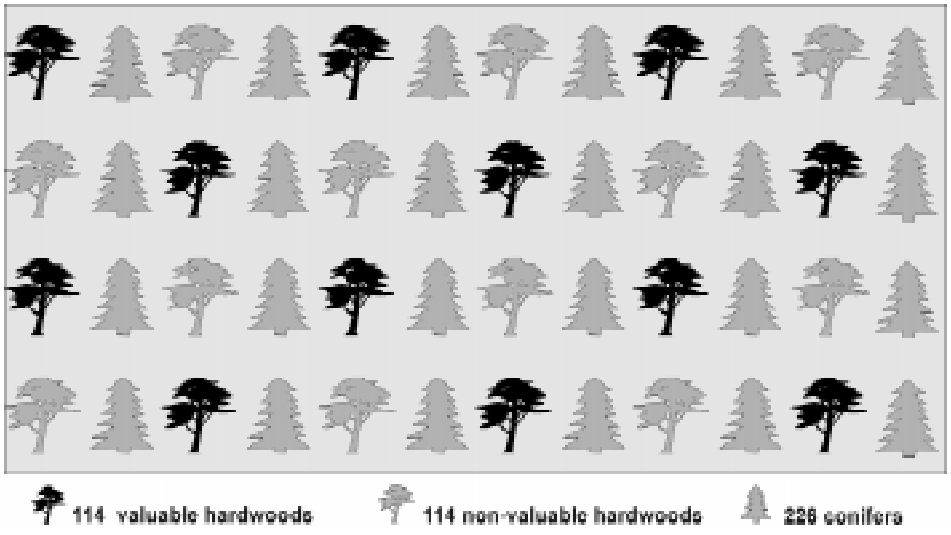
Coral Klum and Jim Elze, Ohio Division of Forestry, inspect oak seedlings during a recent reforestation tour. Maintenance of plantations is critical to the successful establishment of valuable hardwood species.

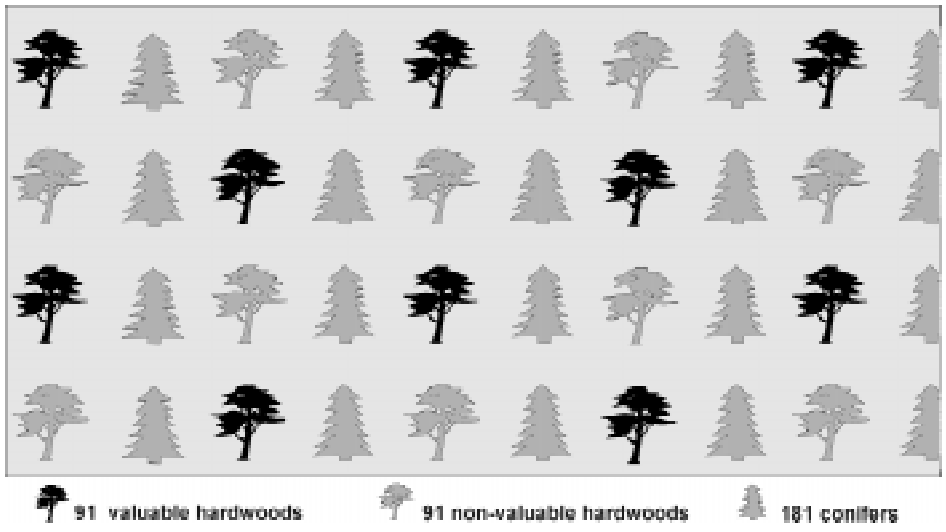
There may be some reason that the landowner wants to establish a plantation that is at least 50 percent hardwoods. If this is the case, it might be appropriate to mix not only the species of hardwoods planted, but also the intensity of management applied to each species.

For example, to maintain the cost of plantation establishment at an acceptable level, it may be necessary to install no more than 100 tree shelters per acre. That is only about 25 percent of the trees being planted (half of the hardwoods). Therefore, tree shelters would be placed only on valuable species like red oak. These trees would be the candidates for the eventual selection of the fifty best crop trees per acre.

An additional 25 percent could consist of a lower value hardwood that would not be an eventual crop tree candidate, but could have beneficial effects on the productivity of the site. An example of such a species is European alder. This low-value hardwood species would not need to be put in a tree shelter, and it would not need the same intensive level of weed control required for the high-value hardwoods.

With these adjustments, there is a need to re-evaluate how the hardwoods are distributed in the plantation. It is important for them to be dispersed in a manner that will give a high probability of having a good distribution of crop trees throughout the stand. The graphics below show a good distribution of valuable hardwoods, low-value hardwoods, and conifers. Companion planting schemes like these enable us to reduce costs of establishment and maintenance for landowners.





The Sustainable Timber Investment Tax Incentive: An Idea Whose Time Has Come?

In February of 1996, I was at Pennsylvania's Cooperative Forest Management meeting where Herb Landis, PA Bureau of Forestry, handed me a document that he and some of his co-workers had developed. It addressed the issue of a capital gains tax incentive that requires the landowner to actively manage in order to obtain favorable capital gains treatment. This is a concept that I have previously thought about, and heard others mention, but have never heard anyone strongly advocate. With the Stewardship Program and the Sustainable Forestry Initiative in place, perhaps now is the time to develop a new tax incentive that could help harness the consulting forester workforce in this nation to accomplish the noble causes in these public and private initiatives.

If a capital gains tax incentive were to become a reality, landowners like Sonny Newhall (left) who are actively managing their forests would be eligible for a reduced capital gains tax rate. In contrast, landowners who simply mine their timber resource would not.

In the past, capital gains treatment for timber investments has been viewed by the forestry community as being deserved by timberland owners because it is equitable. Holding timber for more than a year is definitely a long-term investment that has many risks. Favorable treatment under the tax code is deserved as an incentive to take those risks and, hopefully, eventually reap an appropriate financial reward. Although most people who are aware of the long-term nature of the investment and the high risks involved feel this equitable treatment is deserved, it is not currently available, and hasn't been since 1986.

It might be worthwhile to re-evaluate the strategy used to seek favorable capital gains treatment for landowners. Perhaps it is time to offer up a willingness to have active management be a condition of obtaining the favorable treatment. That means it would not be available to every timberland owner just because they have held an asset for a long time. It would be restricted to those who are willing to make a commitment to manage their forest resource not only to accomplish their goals and objectives, but also to produce long-term public benefits. At a minimum, that means protecting the basic soil and water resources and providing for the regeneration of the forest at the time of harvest.

Some of the most critical times in forest management is just prior to, during, and immediately after a commercial timber harvest occurs. Currently, only a small percentage of the timber harvests that occur on non-industrial private land are implemented with the planning and supervision services of a professional forester. Often this critical activity is undertaken without assistance for one of the following reasons:

- Landowners are ***unaware*** that assistance is available and needed to successfully accomplish this potentially beneficial / potentially devastating activity.

- Landowners are aware of the availability of assistance, but ***reluctant to invest*** in a service they think they can do without.

The Sustainable Timber Investment Tax Incentive would authorize eligible landowners to receive capital gains treatment on the sale of timber from properties with a professionally prepared forest management plan. Minimum standards for approval of such plans would be established by the state forester. In states that have a current use tax law for property taxes and an associated required management plan, the minimum standard plan would be no less stringent than that required plan. In states that do not have such a law, the state forester could designate standards, possibly following those used by a nearby state.

Neil Lamson and John Kotar listen to Craig Locey as he extols the virtues of a management plan that is clear, concise, and based on ecologically sound principles.

In addition, participating eligible landowners would be required to have and follow a professionally prepared harvesting plan that would at a minimum provide for soil and water protection during and after the harvesting operation. It would also prescribe any required regeneration activities to be accomplished prior to, during, or immediately following the timber sale. The State Forester would determine who in the state qualified as a professional forester for the purpose of determining who could prepare both a management plan for the property and a more specific harvesting plan for the timber sale.

The capital gains tax rate would be 15 percent for eligible landowners. The current capital gains tax rate is 28 percent. In most cases this 13 percent reduction would cover much of the cost of having a management and harvesting plan prepared, in addition to having the sale prepared and supervised by a professional forester. In essence, this removes one of the primary reasons landowners sell timber without assistance (reluctance to invest). The other reason, awareness, would need to be addressed through educational programs promoting the use of the tax incentive.

The above described tax incentive would be a public investment in professional management of the nation's non-industrial private forest. Such an investment is warranted at this time because of the nation's increasing reliance on forest products from this landownership category. Apparently, as a matter of national policy, we have determined to rely less on commodity goods (timber) from national forests. We still want the forest products, but we expect this reduced harvest from public lands to be replaced by increased harvest from non-industrial private lands. If, as a society, we are truly

interested in the stewardship and sustainable use of the nation's total forest resource, then surely we are willing to forego the collection of some federal income tax dollars to support the professional management of this vital source of commodities.

Whether at a conference or in the woods, landowners are clearly indicating that tax incentives are an important source of motivation to them.

At the First National Conference on Forest Stewardship in April of 1994, a Circle of Stewards from across the nation was divided into ten discussion groups with approximately fifteen participants. These groups of landowners were asked, "What should be done to increase the number of dedicated forest stewards?" Each group developed a list of activities and then voted on their five highest priority activities on the list. Activities from all ten groups were aggregated into one list of the six highest priority activities. The first priority on this consolidated list is: "Offer tax incentives and tax relief (income, property, and inheritance taxes)." This comes from people who are managing their land telling us what they think will motivate others to join their ranks. I think we should try to implement their suggestion.

Representatives who write tax laws respond to constituents. For change to occur, it will require consensus between public agencies, private industry, landowner organizations, and many individual landowners.

For a proposed modification to the federal income tax code to have any chance of occurring, it requires the support of a diverse group of interests. Public forestry agencies and forest industry should view it as a tool to accomplish the principles outlined in their respective endeavors, the Forest Stewardship Program and the Sustainable Forestry Initiative. Woodland owner associations should support it as a valuable incentive to their membership to practice forest management that will accomplish landowner goals while producing public benefit. Environmental organizations should support it as a proactive step to accommodate the responsible increased production of commodities on private land to compensate for the reduced production from public land. It appears that the timing for such a change might be right. Is it?

•AWP•

Confused About Cost-Share Programs?

If you thought reinvention of government was going to result in one-stop shopping for landowners applying cost-share practices on non-industrial private land, you may be disappointed. The alphabet soup of cost-share programs is still with us. However, before we complain too loudly, those of us who believe cost-sharing is an appropriate public investment need to be thankful that these incentives are still available. All the dust hasn't settled yet, but the following information provided by Robert Moulton, in the USDA-Forest Service Washington Office and Lloyd Casey, Northeastern Area State & Private Forestry, may help you adjust to the changes that are occurring.

The cost-share practice formerly known as ***Agricultural Conservation Program (ACP)***

Program Objective: Soil and water conservation and woodland management.

What happened?:

In FY 1995, the funding for ACP was reduced by 50 percent.

In FY 1996, funding was further reduced, and the 1996 Farm Bill combined it and a number of other cost-share programs into a new ***Environmental Quality Incentives Program (EQIP).***

The NRCS (former SCS) is now the administrator of the new EQIP Program in consultation with FSA (former ASCS). Eligible practices will be determined on a state-by-state basis by the NRCS Technical Committee. Statewide environmental issues will be developed and conservation practices will be determined as they relate to the issues. Forestry can be an issue or it can be a solution to an issue. Landowners will submit bids to implement practices recommended in their Conservation Farm Plan. An Environmental Index will be calculated and funding provided for practices with the lowest index. Forest health, clean water, wildlife habitat improvement, soil stabilization, wind erosion control, livestock exclusion from woodlands, and endangered species habitat enhancement, are all issues that can be addressed with forest practices.

The cost-share practice known as ***Forestry Incentives Program (FIP).***

Program Objective: Increase national timber supply.

What happened?

Funding for FY 1995 and 1996 was reduced by 50 percent to $6.3 million nationwide. The Chief of the Forest Service and the Chief of the Natural Resources Conservation Service (formerly known as the Soil Conservation Service) both are delegated authority to "jointly administer the Forestry Incentives Program ... in consultation

with State Foresters." The "U.S. Forest Service is responsible for the technical phase of practices or components of practices involving planting trees for forestry purposes and improving or protecting a stand of trees." Delivery of technical assistance to landowners is still through the State Forester. Responsibility for the financial administration of the program has been transferred from the Farm Services Administration to the Natural Resources Conservation Service.

The cost-share program known as the ***Stewardship Incentive Program (SIP).***

Program Objective: Enhancement of all forest resources.

What happened?

FY 1996 and FY 1997 funding was reduced to $4.5 million, down from $18.2 million in FY 1995.

Because of reduced funding, several states made adjustments, directing the limited funding to the highest priority practices.

Funding for this program in FY 1996 was caught in the government-shutdown melee, and was delayed so funds could not be used for tree planting in the spring of 1996.

The cost-share program known as the ***Conservation Reserve Program (CRP).***

Program Objective: Establishment of permanent vegetative covers, including trees, on highly erodible cropland.

What happened?

Farmers willing to retire land from agricultural production have ten-year-term contracts available for establishing conifer stands. Fifteen-year-term contracts are available for planting hardwoods or hardwood/conifer mixtures that are 90 percent hardwoods. The hardwood/conifer mixture was recently changed from 51/49 to 90/10. Hopefully, this recent change in ratio will be reversed.

Nationwide, no more than about 36 million acres can be enrolled in the program. Participation is currently at that level. The number of new acres that can be enrolled is approximately equal to the number of acres coming out of the program because of contract expiration or early withdrawal by participants.

What is the expected effect of all these cutbacks in funding for cost-share programs?

From a timber production perspective, it is anticipated that planting on non-industrial private land through U.S. Department of Agriculture programs will be reduced to about 35 percent of accomplishments in recent years. Timber stand improvement will be about 28 percent of recent annual accomplishments. Ironically, these reductions of public investments in timber

management on non-industrial private land are coming at a time when the nation is increasing its reliance on these lands as a source of raw material. Part of the reason for the reduction is simply the increasing competition for funds as the nation struggles to balance its budget. There are also skeptics who question the effectiveness of cost-share programs as incentive tools.

Should these cost-share programs be combined so we can offer one-stop shopping for landowners?

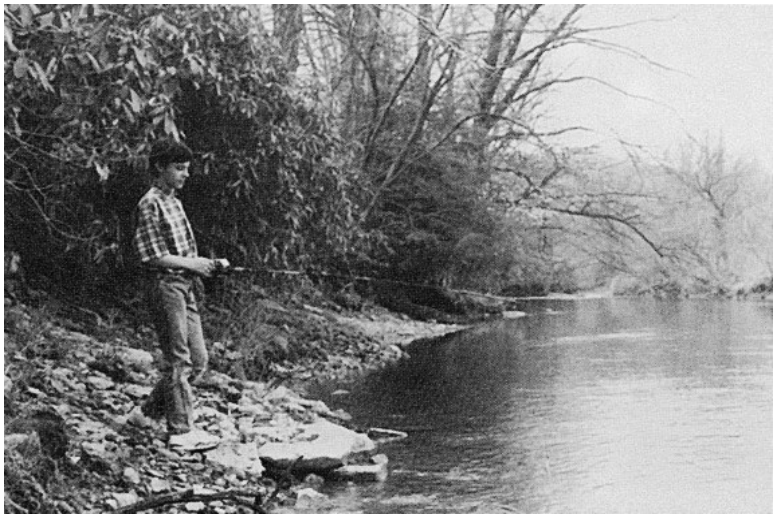
As you can see by looking at the individual program objectives, there are significant differences between them. Soil and water conservation are the cornerstones of EQIP and CRP. Forestry practices are a relatively small (5 and 8 percent, respectively) but important part of these programs that have farmers as the primary clients. Undeniably, EQIP provides financial assistance to landowners (often farmers) who are willing to install conservation practices on agricultural lands, including planting trees. CRP differs from EQIP in that farmers who are taking highly erodible farm land out of agricultural production bid on how much they are willing to accept as rental payments for converting the land from row crops to protective vegetative cover. They commit to retain that altered land use for a specific length of time and receive rental payments for that period. Tree planting has occurred on about 2.6 million of the 36.4 million acres enrolled in CRP.

Many tree farmers and other landowners are still interested in managing their forestland to receive income from the eventual sale of timber products. FIP is primarily a timber production program.

FIP is primarily a timber production program, in contrast to EQIP, CRP, and SIP. Unlike EQIP and CRP, many clients are tree farmers and others who have a goal of receiving income from the eventual sale of timber products from their property. It is the only cost-share program that has national minimum requirements related to site productivity, practice size, and economic efficiency (wood produced per federal dollar).

FIP is a means of the public sharing in those investments so the benefit of a supply of a critical commodity will be available to future generations. At a time when timber harvesting is being curtailed on federal lands, especially National Forests, it is logical to increase public investment on non-industrial private land through this established program.

SIP is the cost-share program for non-industrial private landowners who want to practice multiple-use forest management. Under SIP, there is authorization for cost-share assistance to implement a broader range of management practices to produce wildlife, recreation, and water quality benefits, as well as timber. SIP is available only to non-industrial landowners who have stewardship plans — presently about 5 percent of the non-industrial forest acreage. Many of the clients in this relatively new program are not agricultural farmers, tree farmers, or people that are even aware of the potential of their woods to produce income from the sale of timber. Many are absentee landowners, currently living in an urban area. If they do reside on the property, they are seldom relying on revenue from the land as a significant portion of their income. These clients are not easily reached through the traditional agricultural networks.



SIP is the cost-share program for private non-industrial landowners who want to manage their property for multiple benefits that often include water quality improvement and recreational activities like fishing.

The key federal legislators who determine the destiny of SIP are not the same ones that affect FIP, CRP, and EQIP. The annual appropriation for SIP comes through the Interior Appropriations Subcommittee in the House and the Interior and Related Agencies Appropriations Subcommittee in the Senate.

For FIP, CRP, and EQIP, the annual appropriation comes through the Agriculture Appropriations Subcommittee in the House and the Agriculture, Rural Development, and Related Agencies Subcommittee in the Senate. From the forest landowner's perspective, it would be nice to have these cost-share programs consolidated into one nice, tidy package. However, because these programs are funded by different congressional committees, and because SIP has a broader range of clients, this is unlikely to happen.

These four cost-share programs are not the only ones managers of the private non-industrial forest need to be aware of, but they are prominent ones that have undergone some confusing changes recently. Although we may complain about the difficulty of adjusting to the changes, we also need to be supportive of the programs as tools to accomplish needed work on the private non-industrial forest.

Iowa SAF Student Chapter Hosts Training Session

I have participated in numerous crop tree management training sessions, but the one held near Boone, Iowa, on March 27 and 28, 1996, was unique. It was hosted by the Iowa Society of American Foresters Student Chapter at their winter meeting. Rick Hall, silviculture professor and student chapter faculty advisor, supported the concept of the students hosting a meeting. The student chapter, chaired by Rob Rubsam, worked with Rick and Iowa SAF chair Brent Olson, to develop an agenda that included an indoor crop tree management session followed by on-the-ground trial applications in the field.

Brent Olson and Rob Rubsam select a white oak timber crop tree during an exercise at the Iowa SAF meeting on March 28.

The students were the workforce doing the field preparation work, including locating plots for trial exercises. The event was well organized and executed. Attendance was excellent. As Rick Hall said, "It gave the students some good field experience and a chance to interact with the full membership and show what they could do." I'm sure the membership was impressed with what they saw. I know I was.

•AWP•

Carpet Mulch Critique

In Issue 16 of the Forest Management Update, on Page 14, I referred to the use of carpet as a mulching material around seedlings. It had not been used long enough at that time for me to be able to adequately evaluate its effectiveness. However, after observing its performance for more than a year now, I prefer it over corrugated cardboard. The advantages of using carpet as a mulch are as follows:

- ☺ Less rapid decaying of carpet results in less frequent replacement.
- ☺ Carpet does not dry out and blow off the mulching site during windy weather. On a planting site in a flood plain, it did not wash away during a substantial flood event.
- ☺ It provides an effective barrier to competing vegetation, and it retards evaporation.

Carpet mulch does have the disadvantage of being heavier than cardboard. Consequently, it is important to have vehicular access to the planting site.

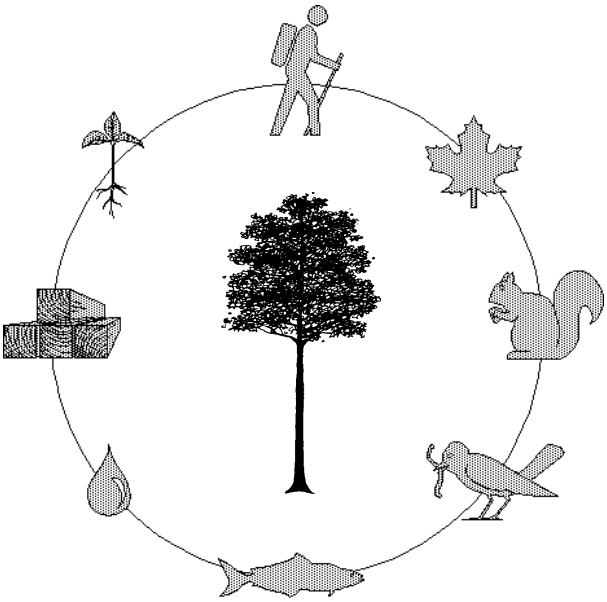
Cardboard mulch deteriorates much more rapidly than carpet mulch.

Carpet mulch provides a very effective barrier to competing vegetation, and it retards evaporation.

•AWP•

NORTHEASTERN AREA
State and Private Forestry

FOREST RESOURCES MANAGEMENT



Managing the forest for:

- ***recreation***
- ***aesthetics***
- ***wildlife & fisheries***
- ***water quality***
- ***forest products***
- ***soil productivity***

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